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## ABSTRACT

ERIC abstracts on assessing educational innovations, announced in RIE through August 1972, are presented. The key terms used in compiling this collection are "educational innovation," "evaluation," and "evaluation criteria." The documents present materials on the change process, the choice and use of good ideas, and the development of assessment and evaluation procedures for determining the achievement of objectives. The following information is presented for each document: Author, title, place of publication, publisher, publication date, number of pages, ERIC document ("ED") number, price and availability, and the abstract. A subject index refers to the document listing number. The subject terms, arranged in alphabetical order, are identical to those contained in the subject index of RIE. (Author)

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## ERIC Abstracts

A Collection of ERIC Document Resumes on

# Assessing Educational Innovations

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Philip K. Piele  
Director, ERIC Clearinghouse  
on Educational Management

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## INTRODUCTION

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To compile each list, the RIE subject indexes are searched, using key terms that define the topic. The documents are selected on the basis of their currency, significance, and relevance to the topic.

For this compilation on assessment of educational innovations, the index terms used are EDUCATIONAL INNOVATION, EVALUATION, and EVALUATION CRITERIA. The documents present materials on the change process, choice and use of good ideas, and development of assessment and evaluation procedures for determining the achievement of objectives. The listing is complete for all issues of RIE through August 1972 and includes documents processed by this and other clearinghouses.

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1. Bockman, John F. "The Use of Behavioral Objectives in Foreign Language Teaching." Tucson: Department of Romance Languages, University of Arizona, 1969. Forum, 16, 2 (January 1969). 8 pages. ED 027 804 MF \$0.65 HC \$3.29.

The great difficulty encountered with most behavioral educational objectives is determining whether they have been achieved. The disparity between new methods and most evaluation practices tends to minimize solid learning achievement. To specify realistic objectives that will prove meaningful in measuring student behavior as an indication of successful learning, educators must train themselves to think in terms of criteria applicable either to observed behavior or to the verifiable product of behavior. In foreign language instruction, the problem is evident in the tendency of teachers to move, in varying degrees, from inventory methods to transaction teaching methods. In these latter methods, the chief learning objective is "unstudied" fluency in speaking. The limited but clear-cut specifications of this objective provide for systematic, continuous readjustment of the means necessary to attain it. Course content revision is, however, only a beginning in the reform battle for a relevant curriculum to accommodate demands for individualized instruction.

2. Bussis, Anne M., and Chittenden, Edward A. Analysis of an Approach to Open Education: Interim Report. Princeton, New Jersey: Educational Testing Service, 1970. 87 pages. ED 050 125 MF \$0.65 HC \$3.29.

Two fundamental concerns of this study were the development of assessment procedures better suited to the more humanistic but less tangible goals of education in general, and the search for a clearer conceptualization of the objectives of open education programs. Two major components of the report are the conceptual analysis of an "open" approach to preschool and primary education, and discussions of the implications of this approach for questions of research and evaluation. Particular attention is given to identifying basic assumptions about children's learning, educational change, and the teacher's role.

3. Caro, Francis G., editor. Readings in Evaluation Research. New York: Russell Sage Foundation, 1971. 430 pages. ED 058 327 Document not available from EDRS. (Available from Russell Sage Foundation, 230 Park Avenue, New York, New York 10017, \$12.50.)

This collection of readings is intended for those concerned with directed social change: researchers, social planners, administrators, and social scientists. The papers address such issues as the nature of the evaluation task, the role of evaluation research in programs of directed change,

the organizational context of evaluation research, and appropriate methodology. Specific case studies and an integrated view of the entire field are presented, including a review of writings on evaluative research.

4. Cooley, William W. "Methods of Evaluating School Innovations." Paper presented at the annual convention of the American Psychological Association, Washington, D.C., September 1971. 30 pages. ED 057 087 MF \$0.65 HC \$3.29.

Specific educational programs attempting to adapt instruction to individual differences are the concern of this evaluative research. Attention is limited to the Frick School, a large urban Pittsburgh school in which the Learning Research and Development Center develops its new educational programs, and to the follow-through network in which the center uses these programs to study processes involved in dissemination of educational innovations.

5. Hoepfner, Ralph, and others. Report on the Field Testing of the CSE Elementary School Evaluation Kit: Needs Assessment. Los Angeles: Center for the Study of Evaluation, University of California, 1971. 145 pages. ED 058 673 MF \$0.65 HC \$6.58.

The evaluation kit is a self-instructional package providing a principal with all procedures and materials necessary to conduct an assessment of his school's educational needs. This report describes the field testing of the kit during the 1970-1971 school year. California, national, and individual case study school samples were used. Participants were required to answer questionnaires on completion of each of five kit booklets. These questionnaires and their results are included in the report. Also presented are conclusions based on the field testing and recommendations for changes in the kit prior to final publication.

6. Holtzman, Wayne H. "The Changing World of Mental Measurement and Its Social Significance." Presidential Address (Division 5) at the annual meeting of the American Psychological Association, Miami Beach, Florida, September 1970. 20 pages. ED 044 438 MF \$0.65 HC \$3.29.

Since the late 1950s, the acceptance of test usage has diminished as test impartiality has been increasingly questioned. Criticisms of testing are delineated, including discrimination implicit in normative testing and the application of resulting test scores. This criticism of measurement techniques has directed attention to other inequities in the educational system. The emergence of new educational techniques and related measurement techniques is a major force in educational reform, resulting in such innovations as new instructional techniques and curricula.

Another important departure from standardized normative measures results from increased concern for developing a national system of social indicators. One of the most significant changes in the field of mental measurement in recent years is a recognition of social, cultural, and linguistic variability. It is noted that the electronic computer is necessary to the implementation of most of the new developments in measurement. A bibliography is included.

7. House, Ernest R., and others. The Demonstration Center. An Appraisal of the Illinois Experience. Urbana, Illinois: Center for Instructional Research and Curriculum Evaluation, University of Illinois, 1970. 49 pages. ED 047 396 MF \$0.65 HC \$3.29.

The purpose of this paper is the examination and evaluation of the form, function, and effectiveness of Illinois demonstration centers established as change agents for the improvement of district programs for gifted children. The evaluation involved analysis of the centers' policies formulated over an extended time period, the quality of the demonstration programs, and the centers' effectiveness in dissemination. Instruments were developed to compare a sample of demonstration classes with regular gifted and nongifted classes, rate centers on the degree of detail provided to explain the program to visitors, and record teacher interviews and visit and postvisit reactions. The paper contends that the centers can be judged successful in achieving the immediate goals of effective dissemination and demonstration of innovative models. The centers cannot be judged successful, however, in their most important goal of convincing local schools to adopt the models. A series of recommendations for improving the centers concludes the study.

8. James, H. Thomas, and others. The Schools and the Challenge of Innovation. New York: Research and Policy Committee, Committee for Economic Development, 1969. 369 pages. ED 030 300 Document not available from EDRS. (Available from Committee for Economic Development, 477 Madison Avenue, New York, New York 10022, \$4.00.)

This work collects papers by authors prominent in educational innovation and technology. The authors, although not always in agreement, agree on the necessity of identifying major problems confronting the schools today as a result of new social forces. In general, they also agree on the necessity of assessing the significance of innovative developments in education, although they do not always agree on the desirability of such innovations. The introduction by Sterling M. McMurrin, on innovation and the purposes of education, is followed by four chapters, each representing a broad area: improved use of school resources, more effective evaluation and research, the challenge of

innovation to teachers, and the possibilities and costs of instructional systems. Contributors are H. Thomas James, J. Alan Thomas, Charles S. Benson, Ralph W. Tyler, John I. Goodlad, Roald F. Campbell, Philip W. Jackson, Robert Glasser, William H. Allen, Wilbur Schramm, Lawrence M. Stolurow, Clyde N. Carter, and Maurice J. Walker.

9. Johnson, Mauritz. Program Evaluators Handbook: Determining Objectives. Albany: State Education Department, State University of New York, 1970. 45 pages. ED 040 328 MF \$0.65 HC \$3.29.

In New York State, strengthening evaluation of educational provisions began with the Elementary and Secondary Education Act Title III. Review and training sessions, paid for with Title III funds, were provided over a three-month period ending in February 1969 for evaluators from the sixteen regional centers. This report on educational objectives is one of six summaries of the sessions. Discussion centered first on the role of the evaluator in describing and appraising educational procedures and results, on evaluation as the process of relating facts to values, on evaluation and educational change, and on general criteria for approval of Title III proposals. Discussion of New York State's educational goals and needs followed. A taxonomy of educational objectives and a listing of objectives proposed by various bureaus of the state department of education were provided. Finally, exercises providing practice in classifying objectives, marking inconsistencies, and so forth, were given to the participants.

10. Kreitlow, Burton W., and MacNeil, Teresa. "An Evaluation of the Model for Educational Improvement as an Analytical Tool for Describing the Change Process. Report from the Project on Models for Effecting Planned Educational Change." Madison: Research and Development Center for Cognitive Learning, University of Wisconsin, 1969. 23 pages. ED 030 197 MF \$0.65 HC \$3.29.

This paper describes the Model for Educational Improvement and reports on an informal test of the hypothesis that the model is a valid description of the educational change process within a school system. The model combines in a new configuration well-known elements of the change process: external and internal inputs, the adoption process, and the relationship of the adoption process to the entire system. The structural design of the model, developed through observation of three Wisconsin school systems over two years, permits a progressive flow of ideas in the process of change and includes an improvement module. Tape recordings and observations of meetings of change-agent teams operating in three school systems were used to test the model's validity. Results indicate the model is a suitable instrument for describing de-

velopments of the change process in school systems. Further, the model has potential for serving as a prototype enabling decisionmakers to observe objectively the efficiency of improvement processes operating in their respective school systems.

11. Kruger, W. Stanley. "Implications of Accountability for Educational Program Evaluation." Paper presented at the Invitational Conference on Measurement in Education, University of Chicago, Chicago, Illinois, April 1970. 14 pages. ED 043 665 MF \$0.65 HC \$3.29.

The concept of accountability in education is concerned with the responsibility of providing effective educational programs and employing efficiently the resources allocated for this purpose. These concerns are fundamental to an evaluation procedure based on the principle of accountability. In 1967, new federal programs in bilingual education and dropout prevention afforded possibilities for an effort to establish accountability principles. Ten critical factors of program design, operation, and management that could expand the dimensions of accountability are identified: community involvement, technical assistance, needs assessment, management systems, performance objectives, performance contracting, staff development, comprehensive evaluation, cost-effectiveness, and program audit. Implications of these factors for program evaluation are discussed.

12. Levin, Henry M. Frontier Functions: An Econometric Approach to the Evaluation of Educational Effectiveness. Paper prepared for Psychometric Society annual meeting, St. Louis, Missouri, April 8, 1970. California: Stanford Center for Research and Development in Teaching, Stanford University, 1971. 29 pages. ED 061 629 MF \$0.65 HC \$3.29.

Designed for federal, state, and local educational administrators, educational researchers familiar with cost-benefit analysis and econometrics, and economists interested in problems of educational finance, this study explores the applicability of an econometric model of evaluation to the study of school efficiency. The emphasis is assessment of school input-output relations that appear to be maximizing educational outcomes. The standard constrained-maximum model is formulated for schools in which output is reflected by a verbal achievement measure and inputs are composed of student characteristics, personnel attributes, facilities, and organizational variables. The model is applied to a sample of white sixth graders attending schools in a large, eastern city during 1965-1966. The model also carries strong implications for dealing with the problems of inner-city and low-income area schools. One of the major implications of the findings is that evaluation results for any group of schools may not be generalizable to any particular school in the sample. The possibility is explored of constructing efficiency rankings for schools

to find which are obtaining the greatest outputs for their resources.

13. Lindvall, C. M., and Cox, Richard C. A Rationale and Plan for the Evaluation of the Individually Prescribed Instruction Project. Philadelphia: Research for Better Schools, Inc., 1969. 8 pages. ED 036 179 MF \$0.65 HC \$3.29.

Evaluation of an educational innovation can aid in development of the innovation, and can provide a basis for making judgments. This report discusses the Individually Prescribed Instruction (IPI) program and its approach to evaluation. IPI evaluation activities are carried out in six areas: program plan, operating program, school context, pupil behavior, teacher behavior, and unplanned influences and other variables.

14. Lohnes, Paul R. "Planning for Evaluation of the LRDC Instructional Model." Buffalo: State University of New York, 1972. 106 pages. ED 061 776 MF \$0.65 HC \$6.58.

The instructional model (IM) on which this evaluation is based resulted from the merger of two major Learning Research and Development Center (LRDC) projects, the Primary Education Project (PEP) and the Individually Prescribed Instruction (IPI) project. This paper examines the center's publications on the problem of evaluation of such an IM and suggests new directions for summative evaluation. It emphasizes the importance of organizing ideas (educational theories) in evaluative research. Seven requirements of a theory of educational criteria are examined and a model is developed for combining information on student entering behaviors, educational treatment, and resulting student achievement. Thirty-two recommendations summarize goals for future refinement of the IM.

15. Maley, Donald. The Maryland Plan for Industrial Arts in the Junior High School and the Behavioral Task Analysis Approach. 1969. 40 pages. ED 034 852 MF \$0.65 HC \$3.29.

The four phases in the development of the Maryland Plan are goal-identification, analysis of goal-related behavior and experiences, integration of these experiences into a living-learning involvement with the industrial arts curriculum content, and evaluation. The plan makes use of the behavioral analysis process for evaluation and for precision and consistency of goals and projected outcomes. The plan is dedicated to three basic ideas in program planning: optimum learning depends on student involvement and interaction with the study area; the industrial arts laboratory needs life and reality; and first-hand knowledge is essential. Under the plan the teacher is perceived as a manager of education who inspires, encourages, and evaluates. Specific examples and charts illustrate the development and usefulness of the plan.

16. McFann, Howard H., and others. Innovations for Training. Alexandria, Virginia: Human Resources Research Office, George Washington University, 1969. 46 pages. ED 030 824 Document not available from EDRS. (Available from National Technical Information Service, Springfield, Virginia 22151, AD-685-498, MF \$0.95, \$3.00.)

Four papers on research and innovation in military training within the army training system deal with procedures for individualizing training; the Project IMPACT prototype system of computer-assisted and programed instructions; student motivation and performance; and prospects for the 1970s and 1980s and the implications of research in learning processes, individual differences, and training management. Training strategies based on flexible curriculum planning are advocated, and individual factors are described (ability as affected by content, organization, and sequencing; methods or media; student motivation; and training management). The Project IMPACT study considers such elements as hardware, software, a decision-making model, and instructional interaction. Concepts of performance, individual and group motivation, goals and rewards, and incentive schedules are discussed in the motivation study, as are issues in course management. The document includes eight figures and six references.

17. Michigan State Department of Education. "Purposes and Procedures of the Michigan Assessment of Education." Paper presented at the annual meeting of the American Educational Research Association, New York, February 1971. Lansing: 1969. 15 pages. ED 046 934 MF \$0.65 HC \$3.29. (Also available from Dr. C. Philip Kcarney, Associate Superintendent, Department of Education, Bureau of Research, Box 420, Lansing, Michigan 48902.)

The state of Michigan directed its department of education to plan and develop a state program to assess educational progress. The purposes and procedures to be followed in the program during the 1969-1970 school year are outlined in this report. The program is to consist of two complementary efforts. The first is an evaluation of school system performance in basic skill achievements, at the fourth and seventh year levels of schooling, using test batteries administered to students. This effort will constitute the initial phase of a continuing, comprehensive evaluation program of school system performance. Definition of educational goals, development of instruments to measure within the goal areas, and information on the level and distribution of Michigan education in terms of additional goal areas will be included in the second area of assessment. This area involves development and evaluation of additional educational performance goals. The criteria for procedures to be used in this program and the importance of such procedures in future educational research are discussed. Information

provided by the evaluation program on needs and problems of a given school system should facilitate planning and directing innovations.

18. Miles, Matthew B. "The Development of Innovative Climates in Educational Organizations." Edited and extended from remarks at the National Conference of Innovative Educators, San Francisco, December 16-18, 1968. Menlo Park, California: Educational Policy Research Center, Stanford Research Institute, 1969. 35 pages. ED 030 971 MF \$0.65 HC \$3.29.

Actualization of educational improvements in school systems necessitates an innovative climate. A schematic diagram shows seven functions constituting the planning and inventing process for educational improvement. Of these seven functions, four are development and adaptation processes and three provide for the routinization of building changes. Management of educational improvements in a school system requires organization of these diverse processes. Coordination, the steering and development of innovative processes, is necessary to promote an innovative climate. Structures to manage innovative processes can be created and existing ones utilized. Seven types of structures are described. Climate, a diffuse concept in educational literature, can be replaced by the well-defined, social-psychological concept of group norm, which specifies organizational conditions promoting innovativeness. The necessary elements of a norm are a group, interaction time among the group, specific ideas of desirable or undesirable behavior, and sanction. Empirical data on innovativeness norms and nine different strategies for changing norms are presented.

19. Mitzel, Harold E. How to Evaluate Computer-Assisted Instruction. University Park: Pennsylvania State University, 1970. 6 pages. ED 047 005 MF \$0.65 HC \$3.29.

Rather than present a cookbook recipe for evaluation of Computer-Assisted Instruction (CAI), this work relates and explains a number of questions relevant to the evaluation of CAI. Is it possible that CAI offers opportunities to reach cognitive instructional objectives to which users of conventional methods do not aspire? Is it reasonable to compare CAI and conventional methods performance in a single subject when the pupils under study are enrolled in four or five other subjects taught by conventional processes? How does one in an overall evaluation of CAI ensure the proper weighting of cognitive criteria based on pupil achievement, and affective criteria based on pupil attitudes and feelings? If the dependent variables of CAI evaluation are classified into two categories, obtrusive and unobtrusive, are both equally persuasive to decision makers? Some suggested unobtrusive measures are length of attention span, mastery time, and absentee rate.

20. National Training Laboratories Institute for Applied Behavioral Science.  
COPED Project. Interim Report. Washington, D.C.: 1969. 25 pages.  
ED 035 097 MF \$0.65 HC \$3.29.

This interim report describes the progress of a project designed to evaluate data collected by the Cooperative Project in Educational Development (COPED). The project has five objectives: (1) to evaluate the COPED instruments, (2) to produce a compilation of instruments measuring social functioning in schools, (3) to develop, field test, and publish feedback packages, (4) to produce a pamphlet on diagnosing schools, and (5) to produce a series of studies on COPED data. The report offers descriptions and critiques of three instruments as examples of progress toward the second objective. Abstracts of two completed studies and memos on two studies underway are presented as examples of progress toward the fifth objective. Also provided are illustrations of the feedback package being designed to meet the third objective.

21. Northwest Regional Educational Laboratory. Proceedings of AERA Symposium: The World of Evaluation Needs Reshaping (Los Angeles, California, February 8, 1969). Papers presented at the AERA Symposium. Portland, Oregon: 1969. 71 pages. ED 031 814 MF \$0.65 HC \$3.29.

The symposium proceedings point out that evaluation of educational innovations awaits the modernization of evaluation theory. Specific approaches to the problem are presented in five papers: (1) "An Overview of the Evaluation Problem," by Egon G. Guba, associate dean, School of Education, Indiana University, Bloomington, Indiana; (2) "An Emergent Theory of Evaluation," by Daniel L. Stufflebeam, director, Evaluation Center, Ohio State University, Columbus, Ohio; (3) "Knowledge About Decision Processes and Information," by Robert S. Randall, director, Division of Program Research and Evaluation, Southwest Educational Development Laboratory, Austin, Texas; (4) "Evaluation Designs and Instruments," by Jack C. Merwin, Director of Psychological Foundations, College of Education, University of Minnesota, Minneapolis, Minnesota; and (5) "The World of Evaluation Needs Reshaping," by Michael C. Giammatteo, Research and Development Specialist, Northwest Regional Educational Laboratory, Portland, Oregon.

22. Owens, Thomas R. "Application of Adversary Proceedings to Educational Evaluation and Decision-Making." Paper presented at the annual meeting of the American Educational Research Association, New York, February 1971. 15 pages. ED 051 272 MF \$0.65 HC \$3.29.

This paper considers the adversary principle, used in law proceedings for judging merits of cases involving opposing parties, as an aid in

educational evaluation and decision-making. In education, it is suggested as an alternative method of interpreting, synthesizing, and reporting evidence. Potential uses include exploring values inherent in a new or existing curriculum, estimating congruence between an innovation and the existing school system, revealing how various group representatives interpret the same data, informing educators of the advantages and limitations of a project, resolving disputes regarding fulfillment of performance contracts, and arriving at decisions to be implemented. The relevance of adversary proceedings to three widely discussed evaluation models is shown. A trial hearing, conducted at the Hawaii Curriculum Center, explored the practicality of the technique. Advantages and limitations of the adversary principle as a strategy for educational evaluation and decision-making are fully discussed.

23. Popham, W. James, editor. Criterion-Referenced Measurement: An Introduction. 1971. 113 pages. ED 053 200 Document not available from EDRS. (Available from Educational Technology Publications, Inc., Englewood Cliffs, New Jersey 07632, \$5.95.)

At the 1970 meeting of the American Educational Research Association, a symposium, jointly sponsored by the National Council on Measurement in Education, was presented on the topic "Criterion-Referenced Measurement: Emerging Issues." The following papers were presented: "Instructional Technology and the Measurement of Learning Outcomes: Some Questions," by Robert Glaser; "Implications of Criterion-Referenced Measurement," by W. James Popham and T. R. Husek; "A Criterion-Referenced Test," by Robert Glaser; "The Applicability of Criterion-Referenced Measurement by Content Area and Level," by Alfred D. Garvin; "Evaluative Aspects of Criterion-Referenced Measures," by Richard C. Cox; and "Indices of Adequacy for Criterion-Referenced Test Items," by W. James Popham. Selected references and biographical data about the authors are also included.

24. President's National Advisory Council on Supplementary Centers and Services. Setting the PACE Through Title III: PACE Report, May, 1969. 1969. 48 pages. ED 032 375 MF \$0.65 HC \$3.29.

This report includes contributions concerned with the PACE program of the Elementary Secondary Education Act, Title III. One editorial reviews five previous studies of PACE and another is devoted to the need for "process evaluation" of Title III projects. Also included are descriptions of three PACE projects in Los Angeles, Michigan, and Connecticut, as well as some comments by congressmen and a senator. Such PACE aspects as inservice training and school community relations are also discussed.

25. Rapp, M. L., and others. Some Considerations in the Experimental Design and Evaluation of Educational Innovations. 1970. 13 pages. ED 052 530 MF \$0.65 HC \$3.29.

The parameters of an evaluation design determine the use of the evaluation, the ultimate user of the results, and the capabilities of the school information system. Evaluation supports decision-making in program adoption and program improvement, as well as in research for a better understanding of the educative process. An experimental design should, therefore, be structured to accommodate all data requirements for the evaluations. Planning for future implementation should be concurrent with planning for innovative programs.

26. Shaftel, Fannie R. The Stanford Evaluation of Nine Elementary Teacher Training Models. Final Report. California: School of Education, Stanford University, 1969. 78 pages. ED 037 395 MF \$0.65 HC \$3.29.

The objective of the Stanford evaluation team was identification of philosophical and conceptual, as well as technical, considerations that might guide evaluation of proposals made by nine USOE-funded elementary teacher training models. The nine models were studied intensively by subteams, discussed and criticized by the entire team over a period of three months, and further explored in consultation with representatives of each of the models in a two-day conference. This report is organized to present general comments involving perceived strengths and weaknesses of all the programs, and analyses of each of the nine models in relation to certain persistent questions. Major issues treated are individualized instruction for prospective teachers, modeling behavior, systems analysis and computer technology, behavioral objectives, coalitions, and innovations and change. Although the overall evaluation of the models is positive, the emphasis of the report is on restating and responding to eight questions which make explicit certain normative issues having fundamental practical consequences for program design and implementation. It is the continuing examination of these questions (for example, "Does it make a difference whether a program takes its departure from a holistic orientation or an atomistic one?") that the evaluators believe ought to be the first concern of teacher trainers in their evaluation and/or use of the teacher education models.

27. Trow, Martin. Methodological Problems in the Evaluation of Innovation. From the proceedings of the Symposium on Problems in the Evaluation of Instruction, Los Angeles, December 1967. Los Angeles: Center for the Study of Evaluation of Instructional Programs, University of California, 1969. 32 pages. ED 031 820 MF \$0.65 HC \$3.29.

This report outlines three aspects of research and innovation in higher education. First, the relevance of social science research methods to educational policy is discussed in relation to the bureaucratic and democratic distribution of power in higher education. Second, research and innovation are discussed and applied toward determining proximate and ultimate goals of an educational institution. Finally, the report evaluates the influence of experimental research on educational processes. Some research methods to explore these difficulties are outlined. Suggestions are given to make innovative research more enlightening by emphasizing its use in clarifying and identifying processes and procedures in education.

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